

Amendments to the Drawings:

The drawing sheet attached in connection with the above-identified application containing Figures 11A-11G and 13A-13G are being presented as a new formal drawing sheets to be substituted for the previously submitted drawing sheets. The drawing Figures 11D and 13D have been amended. Appended to this amendment is an annotated copy of the previous drawing sheets which have been marked to show changes presented in the replacement sheet of the drawing.

Figure 11D and 13D have been amended to correct the air-fuel ratio in the exhaust gas composition mode region. Support for this change can be found in the specification paragraph [0068].

REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 1, 4, 6-9, 13-14, 17, 19-21, 24-26 and 32-35 are currently being amended. The amendments to at least claims 4, 6-9, 13-14, 17, 19-21, 24-26, 32-33 and 35 are to improve the readability of these claims and do not narrow their scope.

This amendment changes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1-34 are now pending in this application.

Figures 11D and 13D have been amended to correct those figures. Support for the amendment to these figures can be found at least in the present specification in paragraph [0068].

Allowable subject matter

Applicant appreciates the indication that claims 6-8, 10-16, 20-22, 28, 29 and 31-33 contain allowable subject matter. Applicant has not amended these claims to be in independent form, because as further discussed below, the independent claims from which these claims depend are allowable.

Rejections under 35 U.S.C. §§ 102 and 103

Claims 1-3, 27, 30 and 34 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,637,189 to Boegner (“Boegner”). Claim 5 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Boegner in view of JP 2001-271685 to Yoichi (“Yoichi”). Claims 4, 9, 17-19, 23-26 and 35 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Boegner in view of U.S. Patent No. 5,974,792 to Isobe (“Isobe”). Applicant respectfully traverses these rejections for at least the following reasons.

Claims 1 and 34

Independent claim 1 is directed to an exhaust purification apparatus which comprises a controller that executes a poisoning release control of an exhaust gas purification catalyst when a predetermined condition is established. The poisoning release control includes a normal mode and an exhaust gas composition mode before the normal mode. A manipulation parameter of the engine related to an exhaust gas composition is manipulated in such a manner that a hydrogen concentration in the exhaust gas flowing into the catalyst in the exhaust gas composition mode is higher than that in the normal mode. Thus in claim 1 poisoning release control includes two modes, a normal mode and an exhaust gas composition mode before the normal mode, where the hydrogen concentration in the exhaust gas flowing into the catalyst in the exhaust gas composition mode is higher than that in the normal mode. Boegner fails to disclose at least this feature of claim 1.

The Office Action on page 4 cites to Boegner at col. 4, lines 6-40 as allegedly disclosing “that the hydrogen concentration in the exhaust gas in the exhaust gas composition mode is higher than (i.e. richer than) in the normal mode. The cited section of Boegner discloses two desulpherization phases, phase I and phase II. During the phase I desulpherization phase the engine air ratio and secondary air feed rate are adapted such that the resultant air accumulator air ratio is kept in the rich range (col. 4, lines 6-14). During the phase II desulpherization phase the secondary air feed rate is reduced and the engine air ratio is raised in such a way that the resultant air accumulator air ratio is kept in the rich range (col. 4, lines 35-45).

The phase I and phase II phases of Boegner, however, do not meet the limitations of the exhaust gas composition mode and normal mode, respectively, as recited in claim 1. Claim 1 recites that the hydrogen concentration in the exhaust gas flowing into the catalyst in the exhaust gas composition mode (which occurs before the normal mode) is higher than that in the normal mode. By contrast, Boegner discloses that air accumulator air ratio is kept in the rich range for both the phase I and phase II phases, and does not disclose that the hydrogen concentration in the exhaust gas flowing into any exhaust gas purification catalyst in phase I is higher than that in phase II. Thus, Boegner fails to suggest or disclose all the features of claim 1.

Yoichi and Isobe were cited for disclosing details of splitting fuel injection, and ignition timing, respectively, and fail to cure the deficiencies of Boegner.

Independent claim 34 recites “manipulating a manipulation parameter of the engine related to an exhaust gas composition in such a manner that a hydrogen concentration in the exhaust gas flowing into the exhaust gas purification catalyst in the exhaust gas composition mode is higher than that in the normal mode”, and is thus patentable for reasons analogous to claim 1.

Claims 17 and 35

Claim 17 is directed to an exhaust purification apparatus which comprises a “controller that executes a poisoning release control of the exhaust gas purification catalyst when a predetermined condition is established, the poisoning release control including a normal mode and an exhaust gas composition mode before the normal mode, an ignition timing in the exhaust gas composition mode being set more toward an advance angle direction than in the normal mode.” Thus, in claim 17, the ignition timing is set more toward an advance angle direction in the exhaust gas composition mode than in the normal mode. The Office Action acknowledges that Boegner “fails to disclose an ignition timing in the exhaust composition mode being set toward a more advance angle direction than that in the normal mode” but argues that it would have been obvious to include this feature in Boegner in view of the Isobe disclosure at col. 20, lines 4-8. Applicant respectfully disagrees.

Isobe does not suggest that the ignition timing in phase I of Boegner should be set more toward an advance angle direction than in phase II. Isobe discloses at col. 20, lines 4-8 that ignition timing may be corrected to a delay angle when an injection dither is shifted to a rich side. As discussed above, however, Boegner discloses that that air accumulator air ratio is kept in the rich range for both the phase I and phase II phases. Because Boegner suggests a rich range for both phase I and phase II, Isobe does not provide any suggestion that the ignition timing being set more toward an advance angle direction for phase I as compared to phase II. Thus, even if Boegner and Isobe were combined, the combination would not suggest the features recited in claim 17.

Independent claim 35 recites “executing a poisoning release control of the exhaust gas purification catalyst when a predetermined condition is established, the poisoning release control including a normal mode and an exhaust gas composition mode before the normal mode; and setting an ignition timing in the exhaust gas composition mode more toward an advance angle direction than in the normal mode”, and is thus patentable for reasons analogous to claim 17.

The dependent claims are patentable for at least the same reasons as their respective independent claims, as well as for further patentable features recited therein.

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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FIG.13A

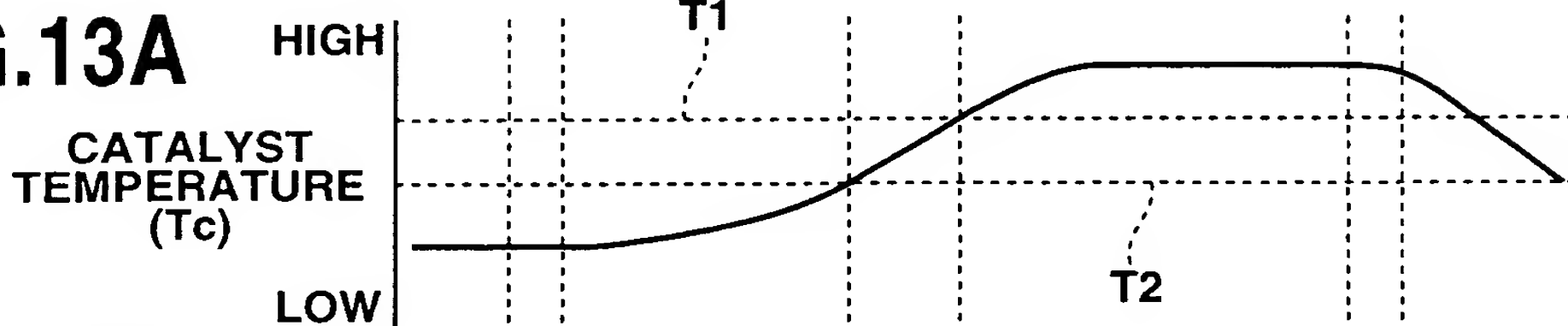


FIG.13B

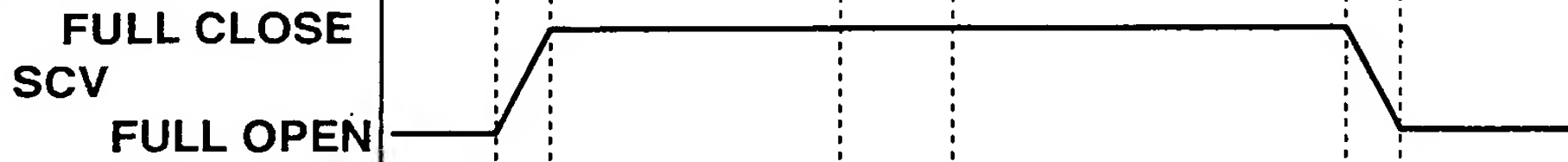


FIG.13C

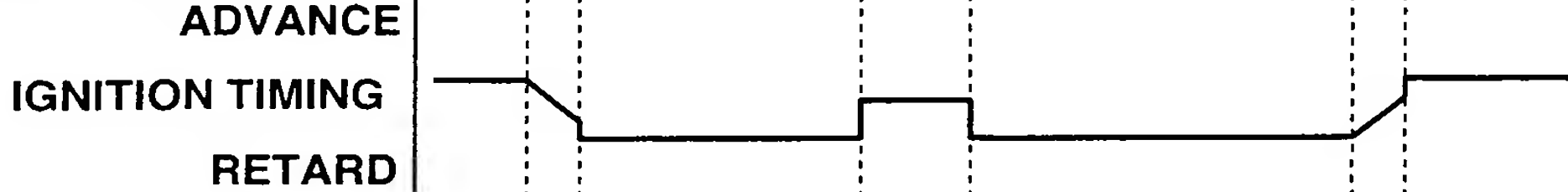


FIG.13D

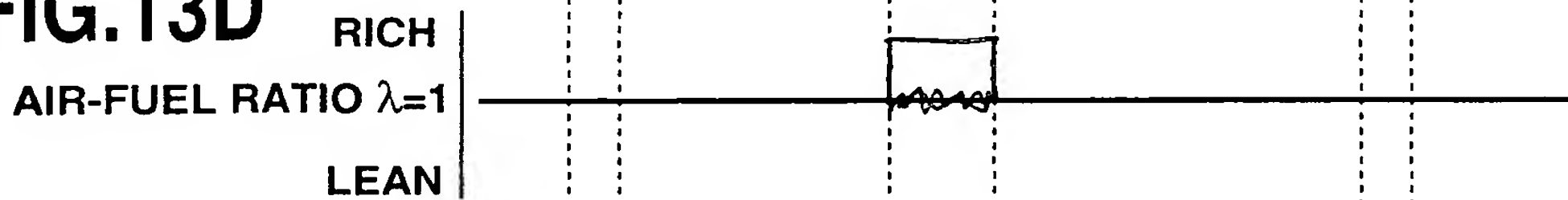


FIG.13E



FIG.13F

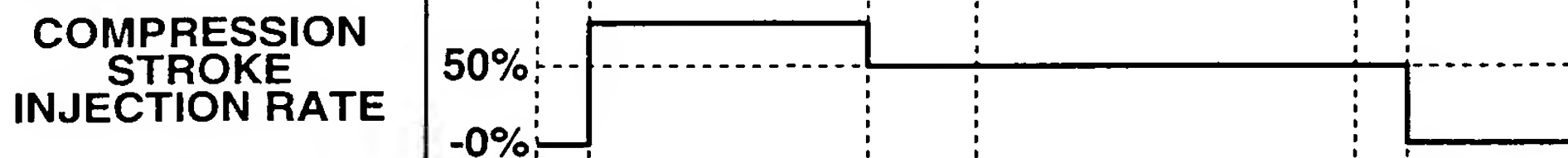


FIG.13G

